SECTION II.K
SALZBURG LANDFILL
CLOSURE PLAN

Required Under 40 CFR Part 270.14(b) (13),
Part 264 Subpart C & 264.310 & Michigan Act 451, Part 111 R. 299.9613

Introduction and Scope

This section outlines the Closure Plan for the Salzburg Landfill (Landfill). The Plan describes activities related to construction of the cap, disposal or decontamination of equipment, structures and soils, long term monitoring, and inspection and maintenance activities required during post-closure. The Plan is intended to satisfy the requirements for cell closure in accordance with current regulations, including MDEQ's R 299.9613 (Rule 613) regarding closure and post-closure of this facility and the closure and post-closure provisions of 40 CFR 264.310 subpart N – Landfills.

Closure Performance Standard

The Salzburg Landfill Closure Plan is designed to ensure that the facility is closed in a manner that minimizes the need for further maintenance; and controls, minimizes or eliminates, to the extent necessary to protect human health or the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground, surface water, or atmosphere.

If evidence of leaks or spills is detected, samples will be taken and analyzed to determine the extent, if any, of contamination in the soil, groundwater, surface water or air. If contamination that can be attributed to the operation or closure of the facility is determined to be present; and the contamination is at concentrations sufficient to pose a threat to human health or the environment; then the most suitable alternative to remedy the contamination will be implemented to ensure protection of public health and the environment.

The closure requirements of 264 Subpart G for containers, tanks, surface impoundments, waste piles, land treatment and incinerators are not applicable to this Closure Plan as they are not part of the Landfill facility.

Description of Cell Closure

See Salzburg Landfill Engineering Plans, Section VI of this application for a complete description of the cell and cap construction, closure, and the extent of the operations which will remain open during the active life of the Facility.

Description of Final Facility Closure

See Salzburg Landfill Engineering Plans, Section VI of this application for a complete description of final facility closure (capping layout).

Maximum Inventory of Wastes

Waste is not stockpiled at the facility for future disposal. Waste is brought to the facility only when there is a licensed, active cell in which it can be placed. No storage or

treatment occurs at the landfill. The total volume of waste placed in the cells is restricted by the design of the cell size and the thickness/amount of daily cover required.

Equipment Disposal/Decontamination and Soil Removal

All equipment used for cap construction that contacts waste material will be thoroughly cleaned before being used on another project task or leaving the work site. The cleaning will be conducted at the facility vehicle wash building (3601 Building) using pressurized water. All equipment will be washed until visibly clean.

The wash water is transferred via pipeline to the The Dow Chemical Company, Michigan Operations, NPDES permitted Waste Water Treatment Facility.

Once waste disposal activities cease at the facility, the areas outside the cells and the access roads will be sampled if necessary to determine if any surface contamination exists. Samples will be analyzed for the primary detection parameters commonly detected in the leachate. Any soil found to have significant levels of contamination above background will be removed and properly disposed of in the remaining active cell. At final facility closure, the facility building and vehicle wash building will be demolished and removed. Any operating equipment leaving the site will be washed before removal.

Within 60 days before the date on which the owner expects to begin partial or final closure of any or all hazardous waste cells, the owner or operator will notify the director in writing of the intended date proposed to initiate closure. A copy of the current Closure Plan for the hazardous waste cells being closed will accompany the notification. Certification of closure and a survey plan for waste locations will be completed and submitted to the Director within 60 days of completion of closure of each hazardous waste cell. The certification will be submitted by registered mail and will indicate that the hazardous waste cells were closed in accordance with the approved closure Plan. The certification will be signed by a registered professional engineer.

Groundwater Monitoring, Leachate Collection, Run-On, Run-Off, and Wind Dispersal Control

Groundwater monitoring will continue during closure in accordance with the Environmental Monitoring Plan outlined for the active facility life.

The leachate collection and removal system is operated automatically and controlled by a level detection device in the collection system. The collection system pump automatically removes the leachate and transfers it to the Michigan Operation’s NPDES permitted Wastewater Treatment Facility via pipeline.

Control of pollutant migration via groundwater is accomplished by the cell liner system. The liner failure detection system is routinely analyzed to confirm the effectiveness of the cell liner system.

Control of pollutant migration via surface water is accomplished by prohibiting stormwater or snow melt run-off from the active areas of the cells. The leachate collection system, earthen berms and/or surface water ditches external to the cells were

constructed to accomplish run-off control and will be modified if necessary to maintain effectiveness.

Should analysis of any environmental media monitored indicate that contaminant levels exist which may create a hazard to human health or the environment, the levels will be reduced using the most suitable alternative to control the discharge.

Should there be a noticeable odor at the fenceline originating from the landfill, the odor will be eliminated or controlled using the most suitable alternative.

Closure Schedule

The closure activities will be completed in accordance with a formal Closure Plan that will be submitted to the MDEQ for approval. Closure activities for a typical cell closure are shown in Table II.K-1. See Section VI, Part II for cap construction details referred to in the schedule. A more precise schedule will be submitted to the MDEQ for each specific cell closure project.

Notification of Partial Closure and Final Closure

The MDEQ will be notified in writing at least 60 days prior to the date closure is expected to begin.

Time Allowed for Closure

Dow Chemical Company will make all efforts to maintain the closure schedule and avoid requesting an extension of closure time.

Closure and Post-Closure Care

Surveying

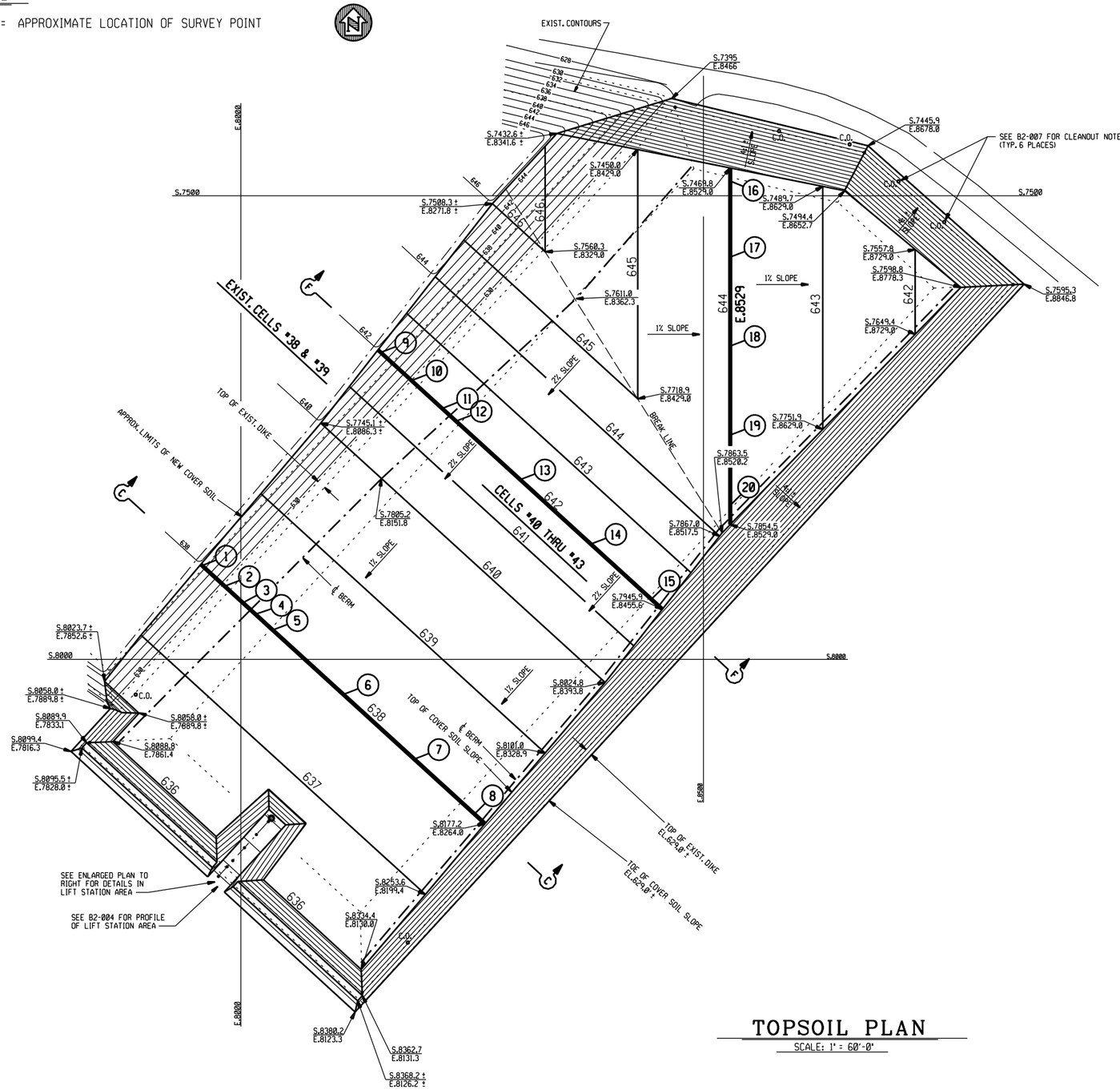
The facility benchmark is resurveyed every three (3) years by checking the benchmark elevation against the nearest USGS benchmark located outside of the facility.

TABLE 1
TYPICAL CELL CLOSURE SCHEDULE

ACTIVITY	WORK DAYS								
	20	40	60	80	100	120	140	160	180
1. Mobilization									
2. Site Grading & Gas Vent Installation									
3. Subbase Preparation									
4. Clay Liner Component (GCL)									
5. Synthetic Liner Component (40 mil HDPE GMB)									
6. Drainage Collection Layer (GDM)									
7. Erosion - Freeze Protection Layer (Cover Soil, Topsoil & Vegetative Cover)									
8. Closure Certification									

LEGEND:

(1) = APPROXIMATE LOCATION OF SURVEY POINT



TOPSOIL PLAN

SCALE: 1" = 60'-0"

CELLS 40 thru 43 - SURVEY vs PLAN TOPSOIL ELEVATION 8/18/08

POINT NUMBER	SURVEY ELEV	PLAN ELEV	Δ ELEV [1]	CROSS SECTION	EAST COORDINATE	SOUTH COORDINATE
1	638.0	638.0	0.0	C-C	E.7957	S.7899
2	637.8	638.0	-0.2	C-C	E.7982	S.7921
3	637.8	638.0	-0.2	C-C	E.8002	S.7939
4	638.0	638.0	0.0	C-C	E.8016	S.7951
5	637.9	638.0	-0.1	C-C	E.8034	S.7968
6	638.0	638.0	0.0	C-C	E.8111	S.8038
7	638.0	638.0	0.0	C-C	E.8187	S.8108
8	638.0	638.0	0.0	C-C	E.8252	S.8167
9	641.9	642.0	-0.1	F-F	E.8151	S.7669
10	642.0	642.0	0.0	F-F	E.8185	S.7699
11	641.9	642.0	-0.1	F-F	E.8218	S.7729
12	641.9	642.0	-0.1	F-F	E.8233	S.7743
13	642.0	642.0	0.0	F-F	E.8302	S.7806
14	642.0	642.0	0.0	F-F	E.8379	S.7876
15	641.8	642.0	-0.2	F-F	E.8444	S.7936
16	643.9	644.0	-0.1	E.8529	E.8529	S.7484
17	643.9	644.0	-0.1	E.8529	E.8529	S.7566
18	643.8	644.0	-0.2	E.8529	E.8529	S.7662
19	643.9	644.0	-0.1	E.8529	E.8529	S.7758
20	643.8	644.0	-0.2	E.8529	E.8529	S.7834

1. The negative number indicates the Survey elevation is lower than the Plan elevation.
A positive number indicates the Survey elevation is higher than the Plan elevation.

REV. MARK	REVISION	BY	CHK	APP	DATE

DRAWING ISSUE RECORD

ISSUE NO.	REV	MATERIAL OR JOB SPEC	BID	FAB	CONST	REF
			DATE ISSUED FOR			

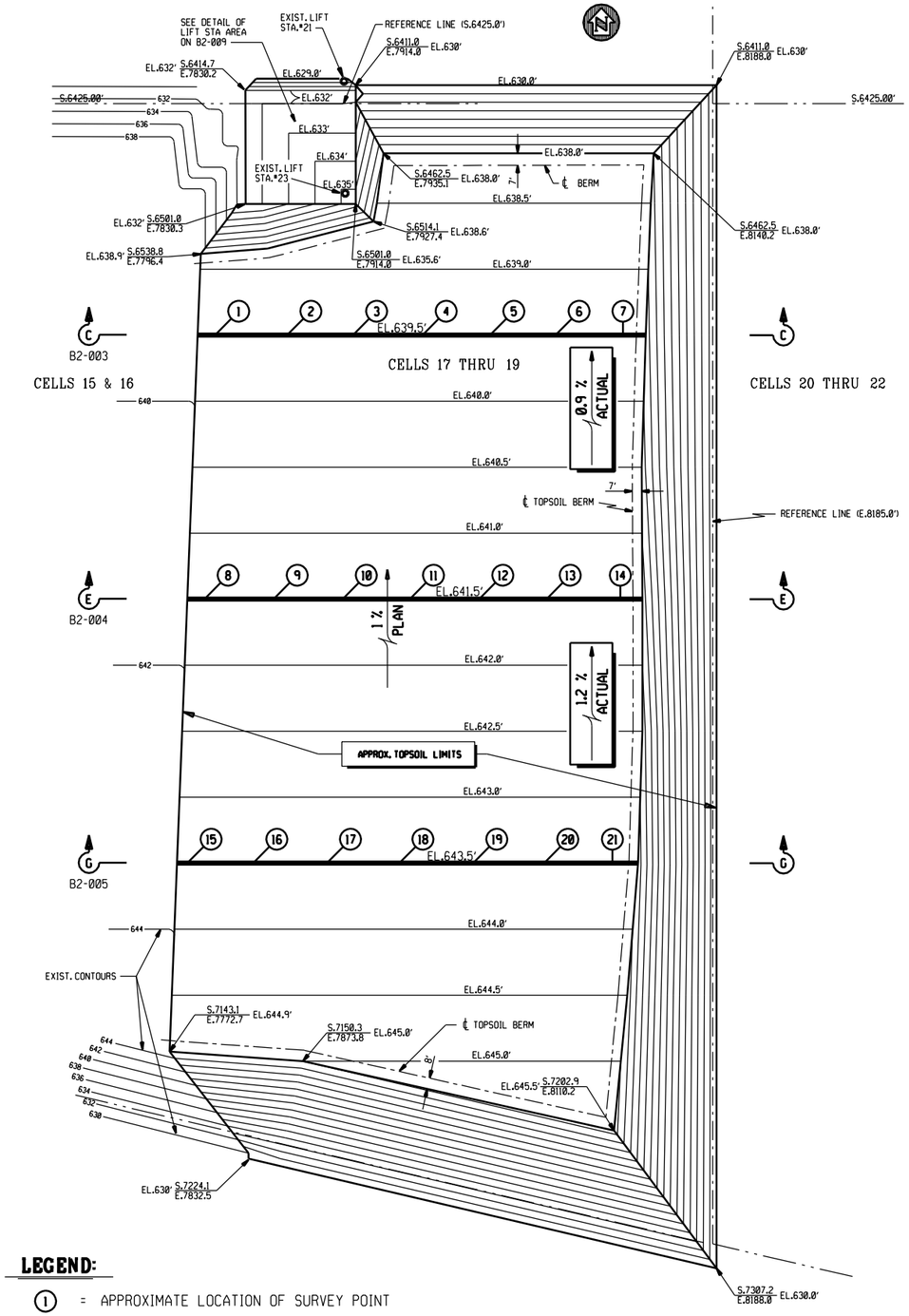
DESIGNED	J.J. ALLEN	9/08
DRAWN	L.E. GIRARDIN	9/08
CHECKED	J.J.A.	9/08
APPROVED	J.J.A.	9/08
PROJ. ENGR.	J.J. ALLEN	9/08
MFG. REP.	KURT DETRICH	9/08

STATUS | PLANT NO.
P.E. SEAL

THE DOW CHEMICAL COMPANY
MICHIGAN OPERATIONS — MIDLAND, MICHIGAN
SALZBURG LANDFILL — 3600 BLDG.

SURVEYED VS PLAN TOPSOIL ELEV. 8-18-08
CELLS 40 THRU 43

EJN NUMBER	SCALE	REV.	PRINTED	VER.
113262	AS NOTED	B2-100-853	2	UND



LEGEND:

(1) = APPROXIMATE LOCATION OF SURVEY POINT

TOPSOIL PLAN

SCALE: 1" = 50'-0"

CELLS 17 thru 19 - SURVEY vs PLAN TOPSOIL ELEVATION 8/18/08

POINT NUMBER	SURVEY ELEV	PLAN ELEV	Δ ELEV [1]	CROSS SECTION	EAST COORDINATE	SOUTH COORDINATE
1	639.4	639.5	-0.1	C-C	E.7807	S.6600
2	639.5	639.5	0.0	C-C	E.7862	S.6600
3	639.6	639.5	0.1	C-C	E.7912	S.6600
4	639.6	639.5	0.1	C-C	E.7965	S.6600
5	639.3	639.5	-0.2	C-C	E.8016	S.6600
6	639.3	639.5	-0.2	C-C	E.8066	S.6600
7	639.2	639.5	-0.3	C-C	E.8117	S.6600
8	641.4	641.5	-0.1	E-E	E.7799	S.6800
9	641.4	641.5	-0.1	E-E	E.7852	S.6800
10	641.6	641.5	0.1	E-E	E.7904	S.6800
11	641.6	641.5	0.1	E-E	E.7955	S.6800
12	641.5	641.5	0.0	E-E	E.8008	S.6800
13	641.2	641.5	-0.3	E-E	E.8059	S.6800
14	641.0	641.5	-0.5	E-E	E.8115	S.6800
15	643.6	643.5	0.1	G-G	E.7786	S.7000
16	643.5	643.5	0.0	G-G	E.7836	S.7000
17	643.7	643.5	0.2	G-G	E.7892	S.7000
18	643.6	643.5	0.1	G-G	E.7947	S.7000
19	643.6	643.5	0.1	G-G	E.8003	S.7000
20	643.5	643.5	0.0	G-G	E.8057	S.7000
21	643.4	643.5	-0.1	G-G	E.8109	S.7000

1. The negative number indicates the Survey elevation is lower than the Plan elevation.
A positive number indicates the Survey elevation is higher than the Plan elevation.

REV. MARK	REVISION	BY	CHK	APP	DATE

DRAWING ISSUE RECORD

ISSUE NO.	REV	MATERIAL OR JOB SPEC	BID	FAB	CONST	REF
			DATE ISSUED FOR			

DESIGNED	J.J. ALLEN	9/08
DRAWN	L.E. GIRARDIN	9/08
CHECKED	J.J.A.	9/08
APPROVED	J.J.A.	9/08
PROJ. ENGR.	J.J. ALLEN	9/08
MFG. REP.	KURT DETRICH	9/08

STATUS | PLANT NO. | P.E. SEAL

THE DOW CHEMICAL COMPANY
MICHIGAN OPERATIONS — MIDLAND, MICHIGAN
SALZBURG LANDFILL — 3600 BLDG.

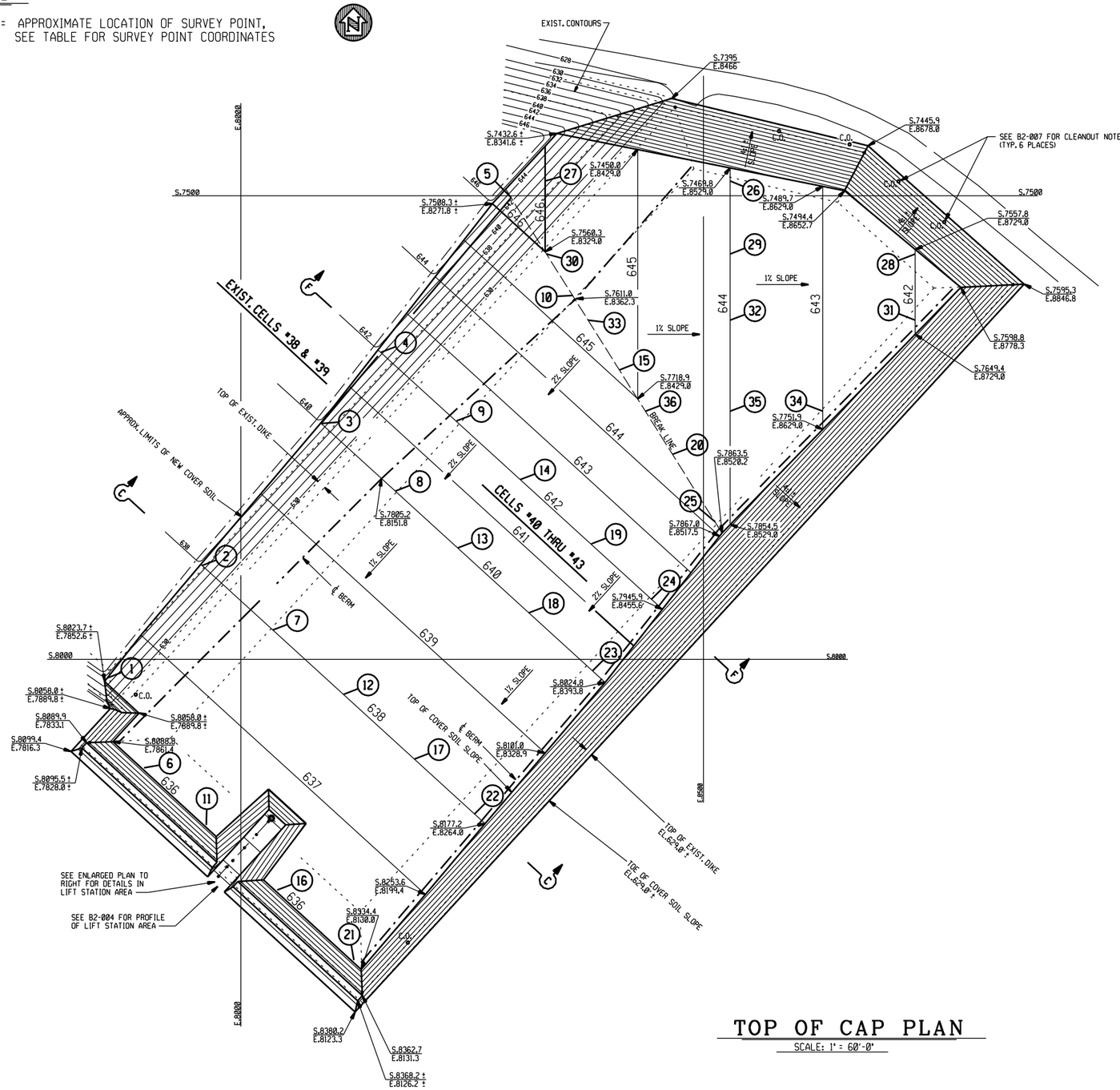
SURVEYED VS PLAN TOPSOIL ELEV. 8-18-08
CELLS 17 THRU 19

EJN NUMBER	SCALE	REV.
113262	AS NOTED	B2-100-854

PRINTED | VER. | 2 | UND

LEGEND:

(1) = APPROXIMATE LOCATION OF SURVEY POINT, SEE TABLE FOR SURVEY POINT COORDINATES



TOP OF CAP PLAN

SCALE: 1" = 60'-0"

SURVEY (DATE) vs ORIGINAL TOP OF CAP ELEVATION

POINT NUMBER	SURVEY ELEV (FEET)	PLAN ELEV (FEET)	Δ ELEV [1] (FEET)	SLOPE TO PREVIOUS POINT [2] (%)	EAST COORDINATE	SOUTH COORDINATE
1		636.4		N/A	E.7855	S.8020
2		638.0			E.7957	S.7899
3		640.0			E.8087	S.7746
4		642.0			E.8151	S.7669
5		646.4			E.8292	S.7502
6		636.0		N/A	E.7895	S.8117
7		638.0			E.8034	S.7968
8		640.0			E.8167	S.7818
9		642.0			E.8233	S.7743
10		645.7			E.8359	S.7607
11		636.0		N/A	E.7963	S.8179
12		638.0			E.8111	S.8038
13		640.0			E.8234	S.7880
14		642.0			E.8302	S.7806
15		645.2			E.8409	S.7688
16		636.0		N/A	E.8039	S.8249
17		638.0			E.8187	S.8108
18		640.0			E.8311	S.7950
19		642.0			E.8379	S.7876
20		644.6			E.8467	S.7779
21		636.0		N/A	E.8122	S.8325
22		638.0			E.8252	S.8167
23		640.0			E.8380	S.8012
24		642.0			E.8444	S.7936
25		644.2			E.8513	S.7852
26		644.0		N/A	E.8529	S.7484
27		646.0			E.8329	S.7484
28		642.0		N/A	E.8729	S.7563
29		644.0			E.8529	S.7563
30		646.0			E.8330	S.7563
31		642.0		N/A	E.8729	S.7634
32		644.0			E.8529	S.7634
33		645.5			E.8375	S.7634
34		643.0		N/A	E.8629	S.7732
35		644.0			E.8529	S.7732
36		644.9			E.8437	S.7732

1. The negative number indicates the Survey elevation is lower than the Plan elevation.
   A positive number indicates the Survey elevation is higher than the Plan elevation.
2. N/A indicates slope calculation between this point & previous point is not applicable.

REV. MARK	REVISION	BY	CHK	APP	DATE

DRAWING ISSUE RECORD							
ISSUE NO.	REV	MATERIAL OR JOB SPEC	BID	FAB	CONST	REF
			DATE ISSUED FOR			

DESIGNED	J.J. ALLEN	10/08
DRAWN	L.E. GIRARDIN	10/08
CHECKED	J.J.A.	10/08
APPROVED	J.J.A.	10/08
PROJ. ENGR.	J.J. ALLEN	10/08
MFG. REP.	KURT DETRICH	10/08

STATUS | PLANT NO. | P.E. SEAL

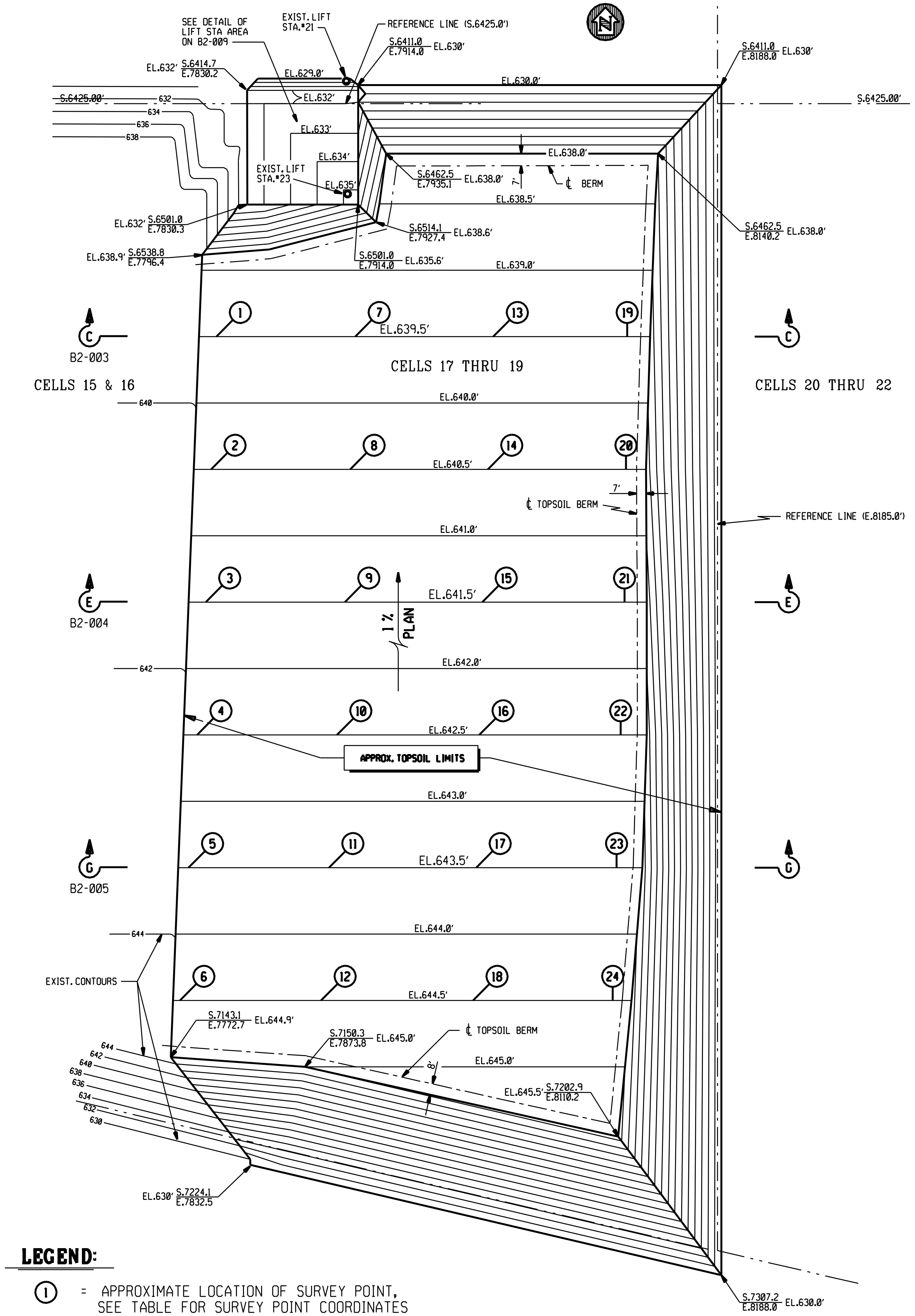
THE DOW CHEMICAL COMPANY
MICHIGAN OPERATIONS — MIDLAND, MICHIGAN
SALZBURG LANDFILL — 3600 BLDG.

CAP ELEVATION SURVEY PLAN
CELLS 40 THRU 43

EJN NUMBER	SCALE		REV.	
114291	AS NOTED	B2-200-853	2	UND

PRINTED | VER.

$INSTRUCTIONS $DATE $TIME $FILENAME $PERSON



LEGEND:

(1) = APPROXIMATE LOCATION OF SURVEY POINT, SEE TABLE FOR SURVEY POINT COORDINATES

TOP OF CAP PLAN

SCALE: 1" = 50'-0"

SURVEY (DATE) vs ORIGINAL TOP OF CAP ELEVATION

POINT NUMBER	SURVEY ELEV (FEET)	PLAN ELEV (FEET)	Δ ELEV[1] (FEET)	SLOPE TO PREVIOUS POINT[2] (%)	EAST COORDINATE	SOUTH COORDINATE
1		639.5		N/A	E.7807	S.6600
2		640.5			E.7803	S.6700
3		641.5			E.7799	S.6800
4		642.5			E.7793	S.6900
5		643.5			E.7786	S.7000
6		644.5			E.7780	S.7100
7		639.5		N/A	E.7912	S.6600
8		640.5			E.7908	S.6700
9		641.5			E.7904	S.6800
10		642.5			E.7898	S.6900
11		643.5			E.7892	S.7000
12		644.5			E.7886	S.7100
13		639.5		N/A	E.8016	S.6600
14		640.5			E.8012	S.6700
15		641.5			E.8008	S.6800
16		642.5			E.8005	S.6900
17		643.5			E.8003	S.7000
18		644.5			E.8001	S.7100
19		639.5		N/A	E.8117	S.6600
20		640.5			E.8116	S.6700
21		641.5			E.8115	S.6800
22		642.5			E.8112	S.6900
23		643.5			E.8109	S.7000
24		644.5			E.8106	S.7100

1. The negative number indicates the Survey elevation is lower than the Plan elevation.
A positive number indicates the Survey elevation is higher than the Plan elevation.
2. N/A indicates slope calculation between this point & previous point is not applicable.

REV. MARK	REVISION	BY	CHK	APP	DATE	REV. MARK	REVISION	BY	CHK	APP	DATE

DRAWING ISSUE RECORD

ISSUE NO.	REV	MATERIAL OR JOB SPEC	BID	FAB	CONST	REF

DATE ISSUED FOR

Role	Name	Date
DESIGNED	J.J. ALLEN	10/08
DRAWN	L.E. GIRARDIN	10/08
CHECKED	J.J.A.	10/08
APPROVED	J.J.A.	10/08
PROJ. ENGR.	J.J. ALLEN	10/08
MFG. REP.	KURT DETRICH	10/08

STATUS | PLANT NO. | P.E. SEAL

THE DOW CHEMICAL COMPANY
MICHIGAN OPERATIONS — MIDLAND, MICHIGAN
SALZBURG LANDFILL — 3600 BLDG.

CAP ELEVATION SURVEY PLAN
CELLS 17 THRU 19

EJN NUMBER 114291 | SCALE AS NOTED | B2-200-854 | REV.

2 UND

PRINTED | VER.

$PERSON $DATE $TIME $FILENAME $INSTRUCTIONS